

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY  
(SUPPLEMENTARY SHEET)

International File No. PCT/EP2004/053438

Re Section V.

1. Reference is made to the following documents in the  
present opinion:

- D1: US 2003/199115 A1 (Mattox, Barry G.), October 23,  
2003
- D2: US-B1-6 249 155 (Hartman, Kenneth D. et al.), June  
19, 2001
- D3: WO 02/37684 A (SZ Testsysteme AG [SZ Test Systems  
Inc.]; Kreckl, Andreas; Frey, Martin), May 10, 2002

2. Independent claims

2.1 Novelty

The present application fails to meet the requirements of  
Article 33(1) PCT because the object of Claims 1 and 9 is  
not novel in the sense of Article 33(2) PCT.

- a) With regard to the device of Claim 9, document D1  
(§§ 22-33, 58; Figures 1, 2) discloses:

a device made up of a triggering unit (134) and a  
heterodyne interferometer, comprising

- two AOMs (136, 138) in separate light paths,
- a receiver (132, 242) which supplies an analog  
signal,
- a downstream A/D converter (246) for forming a  
digital signal from the analog signal, whereby

- the one AOM (136) is triggered at a modulation frequency  $f_1$  and the other AOM (138) is triggered at another modulation frequency of  $f_2$  [sic; frequency  $f_2$ ] and the difference in modulation frequencies  $f_1$  and  $f_2$  corresponds to a heterodyne frequency  $f_{\text{Het}}$  ( $f_{\text{IF}}$ ) and
- for conversion of the analog signal to the digital signal, a sampling frequency  $f_a$  ( $4(f_1 - f_2)$ ) is provided, wherein,
- the triggering unit (digital synthesizer 134) for generating at least two of the frequencies, i.e., from modulation frequencies  $f_1$ ,  $f_2$  and sampling frequency  $f_a$  has a common oscillator having fundamental frequency  $f_{\text{quartz}}$  (an oscillator having a fundamental frequency may be regarded as an implicit feature of a digital synthesizer).

b) Independent Claim 1 relates to a method for triggering a heterodyne interferometer which corresponds to the device described in Claim 8 and does not contain any additional features. Claim 1 is therefore *mutatis mutandis* not novel.

### 3. Dependent claims

Dependent Claims 5 through 7 and 9 through 15 do not contain any features which, in combination with the object of any claim to which they refer, could meet the requirements of PCT with respect to novelty and/or inventive step (Article 33(3) PCT). The reasons for this are as follows:

Claims 7, 8: Document D1 (§ 58) discloses a sampling frequency of  $4f_{\text{Het}}$ .

Claims 2, 4, 5, 10: It would be self-evident for those skilled in the art to use specifically a direct digital synthesizer as the digital synthesizer, as described, for example in document D2 (column 5, line 11 through column 6, line 60; Figure 1) and D3 (page 5, line 5 through page 6, line 18; Figures 1, 2).

Claims 3, 11: For those skilled in the art having the goal of generating two frequencies  $f_1$  and  $f_2$  with the help of a direct digital synthesizer, it would be an obvious possibility to use two separate DDS units in combination with an oscillator fundamental frequency.

Claims 6, 7, 12-14: In the description (page 5, paragraph 3) the sampling frequency of  $4f_{\text{Het}}$  described in document D1 (§ 58) is described as particularly advantageous. A simplified circuit design in which the sampling frequency is formed by a divider unit from the modulation frequencies may be regarded as a conventional and self-evident alternative for those skilled in the art.